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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/609,421	07/01/2003	Hiroshi Ohkura	03500.014730.1	9477

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EXAMINER

BERNATZ, KEVIN M

ART UNIT PAPER NUMBER

1773

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/609,421

Applicant(s)

OHKURA ET AL.

Examiner

Kevin M Bernatz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-5 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 2-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/649,598.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7+11/03.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Preliminary amendments to claims 1 - 5, filed on September 10, 2003, have been entered in the above-identified application.

Examiner's Comments

2. The Examiner has given the limitation "protrusion" the broadest reasonable interpretation in view of the as-filed disclosure and the knowledge of one of ordinary skill in the art. Specifically, the Examiner deems that any substrate possessing a surface which possesses different characteristics would necessarily read on the above limitations since each area of different characteristic would necessarily "protrude" from the substrate, i.e. the specification does not require that blank space exist between each "protrusion", so a layer of ABABABABABA would read on the claimed limitation, wherein A is a "protrusion" and B is a material located between two adjacent protrusions).
3. Regarding the limitation(s) "column-shaped body", the Examiner has given the term(s) the broadest reasonable interpretation(s) in view of the knowledge of one of ordinary skill in the art at the time of applicants' invention. Specifically, the Examiner has interpreted the term "column-shaped body" to include any body that possesses a long axis and a short axis, wherein the long axis extends perpendicular to the substrate surface (including pores, rectangular bodies, acicular grains, etc).

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. The Examiner notes that the present claims are held as being subject to double patenting over several related applications. Where the basis of the rejections are similar, the Examiner has stated the rejections in the alternative under the same paragraph number.

6. Claims 2 – 5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 - 24 of U.S. Patent No. 6,278,231 B1; - and -

Claims 2 – 5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 - 36 of copending Application No. 09/867,611 (U.S. Patent App. No. 2001/0028872 A1); - and -

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Claims 2 – 4 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 - 19 of copending Application No. 10/385,570 (U.S. Patent App. No. 2003/0175472 A1).

Although the conflicting claims are not identical, they are not patentably distinct from each other because the above patent and applications disclose a structure meeting applicants' claimed limitations, as disclosed in Table 1 below.

Table 1: Comparison versus related applications

Claimed Limitations	Where claimed in '231 B1	Where claimed in '872 A1	Where claimed in '472 A1
Substrate	<i>Claim 1</i>	<i>Claim 1</i>	<i>Claim 1</i>
Protrusions	<i>Claim 10</i>	<i>Claims 4 and 9</i>	<i>Claim 1 (2nd layer)</i>
Layer formed on substrate with a nanohole	<i>Claim 1</i>	<i>Claim 1</i>	<i>Claims 1 and 7 (1st layer)</i>
Layer contacting with a protrusions	<i>Claim 11</i>	<i>Claim 11</i>	<i>Claim 4</i>
Nanohole connects with the substrate	<i>Claim 1</i>	<i>Claim 1</i>	<i>Claim 4</i>

Layer contains Al (<u>claim 3</u>)	<i>Claim 21</i>	<i>Claim 21</i>	<i>Claim 3</i>
Protrusions include organic/ Si (<u>claim 4</u>)	<i>Claim 5</i>	<i>Claim 5</i>	<i>Claim 4</i>
Magnetic material in column/pore (<u>claim 5</u>)	<i>Claim 16</i>	<i>Claim 16</i>	<N/A>

7. Claim 5 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 - 19 of copending Application No. 10/385,570 as applied above, and further in view of Hattori et al. (U.S. Patent No. 6,313,969 B1). This is a provisional obviousness-type double patenting rejection.

Application '570 is relied upon as described above.

Application '570 fails to disclose a magnetic material meeting applicants' claimed "column-shaped body" limitation.

However, Hattori et al. teach filling holes/pores with a magnetic material, thereby meeting applicants' claimed "column-shaped body" limitation, is known to produce a magnetic recording medium with a high transfer rate of data with no fringing problem (Figure 2F and col. 2, lines 16 – 62).

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It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Application '570 to include magnetic material meeting applicants' claimed structural limitations as taught by Hattori et al. in order to produce a magnetic recording medium with a high transfer rate of data with no fringing problem.

8. Claims 2 – 5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 - 50 of copending Application No. 10/656,242 (U.S. Patent App. No. 2004/0048092 A1) in view of Kuroe et al. (U.S. Patent No. 5,618,448). This is a provisional obviousness-type double patenting rejection; - and -

Claims 2 – 5 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 - 50 of copending Application No. 09/964,781 (U.S. Patent App. No. 2002/0086185 A1) in view of Kuroe et al. ('448). This is a provisional obviousness-type double patenting rejection.

Applications '242 and '781 disclose the claimed invention as shown in Table 2, below.

Neither application discloses protrusions formed on the surface of the substrate (claim 2), nor whether said protrusions include Si or an organic material (claim 4).

However, Kuroe et al. teach that forming protrusions on a silicon containing substrates provides a magnetic disk with "improved CSS and anti-head stick properties

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without lowering the S/N ratio" (col. 2, lines 44 – 63; col. 3, lines 63 – 67; and Examples).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of either Application '185 A1 or Application '092 A1 to include a substrate possessing a plurality of protrusions contacting the layer deposited on the substrate, wherein the protrusions include Si or an organic material as taught by Kuroe et al. in order to produce a magnetic disk with "improved CSS and anti-head stick properties without lowering the S/N ratio".

Table 2: Comparison to Copending Applications

Claimed Limitations	Where claimed in '185 A1	Where claimed in '092 A1
Substrate	<i>Claim 1</i>	<i>Claim 21</i>
Protrusions	<N/A>	<N/A>
Layer formed on substrate with a nanohole	<i>Claims 1 and 3</i>	<i>Claims 17 and 21</i>
Layer contacting with a protrusions	<i>Claim 1 (layer contacts substrate)</i>	<i>Claim 21 (layer contacts substrate)</i>
Nanohole connects with	<i>Claim 10</i>	<i>Claim 28</i>

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the substrate		
Layer contains Al (<u>claim 3</u>)	<i>Claim 1</i>	<i>Claim 19</i>
Protrusions include organic/ Si (<u>claim 4</u>)	<N/A>	<N/A>
Magnetic material in column/pore (<u>claim 5</u>)	<i>Claim 27</i>	<i>Claims 21 and 38</i>

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 2 – 5 are rejected under 35 U.S.C. 102(a) as being anticipated by Iwasaki et al. (EP 951-047 A2).

Regarding claim 2, Iwasaki et al. disclose a structure having a nanohole (*Figure 2 and Title*), comprising a substrate having a plurality of protrusions (*Figures 12A, 17 and Figure 21D*), and a layer formed on the substrate (*e.g. Figure 21D, elements 13, 14, 16 and 233*), the layer having a nanohole (*elements 14 and Paragraph 0025*) and contacting with a protrusion (*element 231*) such that the nanohole connects with the substrate (*e.g. filled nanohole disclosed by number 233*).

Regarding claim 3, Iwasaki et al. disclose the layer containing Al (*Paragraph 0025*).

Regarding claim 4, Iwasaki et al. disclose the protrusions include Si or an organic material (*Paragraphs 0057 – 0058*).

Regarding claim 5, Iwasaki et al. disclose a magnetic recording media (*Paragraph 0082*) comprising a substrate having a plurality of protrusions and a layer formed on the substrate as described above. Iwasaki et al. further disclose wherein the layer has a column-shaped body comprising a magnetic material (*Paragraphs 0057, 0058 and 0081 – 0083; and Figure 21D, element 233*).

11. Claims 2 – 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Iwasaki et al. (U.S. Patent App. No. 2001/0028872 A1).

Regarding claim 2, Iwasaki et al. disclose a structure having a nanohole (*Figure 2 and Title*), comprising a substrate having a plurality of protrusions (*Figures 12A, 17 and Figure 21D*), and a layer formed on the substrate (*e.g. Figure 21D, elements 13, 14, 16 and 233*), the layer having a nanohole (*elements 14 and Paragraph 0018*) and

contacting with a protrusion (*element 231*) such that the nanohole connects with the substrate (*e.g. filled nanohole disclosed by number 233*).

Regarding claim 3, Iwasaki et al. disclose the layer containing Al (*Paragraph 0019*).

Regarding claim 4, Iwasaki et al. disclose the protrusions include Si or an organic material (*Paragraphs 0101 – 0102*).

Regarding claim 5, Iwasaki et al. disclose a magnetic recording media (*Paragraph 0136*) comprising a substrate having a plurality of protrusions and a layer formed on the substrate as described above. Iwasaki et al. further disclose wherein the layer has a column-shaped body comprising a magnetic material (*Paragraphs 0101, 0102 and 0133 – 0137; and Figure 21D, element 233*).

12. Claims 2 – 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Iwasaki et al. (U.S. Patent No. 6,278,231 B1).

Regarding claim 2, Iwasaki et al. disclose a structure having a nanohole (*Figure 2 and Title*), comprising a substrate having a plurality of protrusions (*Figures 12A, 17 and Figure 21D*), and a layer formed on the substrate (*e.g. Figure 21D, elements 13, 14, 16 and 233*), the layer having a nanohole (*elements 14 and col. 4, lines 3 - 17*) and contacting with a protrusion (*element 231*) such that the nanohole connects with the substrate (*e.g. filled nanohole disclosed by number 233*).

Regarding claim 3, Iwasaki et al. disclose the layer containing Al (*col. 4, lines 189 – 31*).

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Regarding claim 4, Iwasaki et al. disclose the protrusions include Si or an organic material (*col. 13, line 32 bridging col. 14, line 12*).

Regarding claim 5, Iwasaki et al. disclose a magnetic recording media (*col. 12, lines 10 - 19*) comprising a substrate having a plurality of protrusions and a layer formed on the substrate as described above. Iwasaki et al. further disclose wherein the layer has a column-shaped body comprising a magnetic material (*col. 13, line 32 bridging col. 14, line 12; and Figure 21D, element 233*).

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claims 2 – 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kikitsu et al. (U.S. Patent No. 6,602,620) in view of Kuroe et al. ('448).

Regarding claims 2 and 4, Kikitsu et al. disclose a structure having a nanohole (*Figure 13b and Table 1*), comprising a substrate (*elements 10 and 20 and col. 24, lines 25 - 33*), and a layer formed on the substrate (*element 30*), the layer having a nanohole (*element 31; Table 1 and col. 23, line 62 bridging col. 24, line 9*) such that the nanohole connects with the substrate (*Figure 13b*).

Kikitsu et al. fails to disclose a substrate having a plurality of protrusions wherein the layer on the substrate contacts with a protrusion.

However, Kuroe et al. teach that forming protrusions on a silicon containing substrates provides a magnetic disk with “improved CSS and anti-head stick properties without lowering the S/N ratio” (*col. 2, lines 44 – 63; col. 3, lines 63 – 67; and Examples*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kikitsu et al. to include a substrate possessing a plurality of protrusions contacting the layer deposited on the substrate, wherein the protrusions include Si or an organic material as taught by Kuroe et al. in order to produce a magnetic disk with “improved CSS and anti-head stick properties without lowering the S/N ratio”.

Regarding claim 3, Kikitsu et al. disclose the layer containing Al (*col. 25, lines 21 - 25*).

Regarding claim 5, Kikitsu et al. disclose a magnetic recording media (*col. 24, lines 1 - 3*) comprising a substrate having a plurality of protrusions and a layer formed on the substrate as described above. Kikitsu et al. further disclose wherein the layer has a column-shaped body comprising a magnetic material (*Figure 13 b*).

15. Claims 2 – 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hattori et al. ('969 B1) in view of Kuroe et al. ('448).

Regarding claims 2 and 4, Hattori et al. disclose a structure having a nanohole (*Figure 2F and col. 4, lines 38 - 43*), comprising a substrate (*elements 12 and 20 and col. 4, lines 45 - 61*), and a layer formed on the substrate (*elements 14 and 16*), the

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layer having a nanohole (*element 14 and col. 4, lines 38 - 43*) such that the nanohole connects with the substrate (*Figure 2F*).

Hattori et al. fails to disclose a substrate having a plurality of protrusions wherein the layer on the substrate contacts with a protrusion.

However, Kuroe et al. teach that forming protrusions on a silicon containing substrates provides a magnetic disk with "improved CSS and anti-head stick properties without lowering the S/N ratio" (*col. 2, lines 44 – 63; col. 3, lines 63 – 67; and Examples*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Hattori et al. to include a substrate possessing a plurality of protrusions contacting the layer deposited on the substrate, wherein the protrusions include Si or an organic material as taught by Kuroe et al. in order to produce a magnetic disk with "improved CSS and anti-head stick properties without lowering the S/N ratio".

Regarding claim 3, Hattori et al. disclose the layer containing Al (*col. 4, lines 53 - 57*).

Regarding claim 5, Hattori et al. disclose a magnetic recording media (*Title*) comprising a substrate having a plurality of protrusions and a layer formed on the substrate as described above. Hattori et al. further disclose wherein the layer has a column-shaped body comprising a magnetic material (*Figure 2F*).

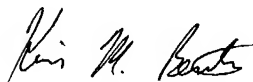
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Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (571) 272-1516. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin M. Bernatz
Patent Examiner

March 17, 2004